April 25, Mission Science summary

ER-2 took off at approx. 0712 UTC after a requested 1-hour delay from the originally scheduled 0600 UTC time. That was because the forecast settled on a slightly later time for development of convection south and west of SGP, which turned out to be accurate. The first pass of the ER-2 was a NW-SE run over a suspected soil moisture gradient centered

near PNC, prior to the main convective development. Next, a zone of growing deep convection developed roughly along a WSW-ENE line, starting near near Tulsa, extending just south of SGP, and culminating with a strong storm about 50 nm SW of SGP. The ER-then made several passes over this area, flying SW-NE oriented lines. As the storms approached PNC, we still delayed the Citation launch, because the storms had still not produced extended anvils to work. But by 0900Z, anvils had started to extend over SGP, so we encouraged a takeoff, which was delayed while the first of several thunderstorms passed over the PNC airport. The Citation was airborne at approximately 0924Z, then circled around to the north to get on a SW-NE line through stratiform/anvil echo at FL 270. This took some time to set up, while the ER-2 had switched to a racetrack pattern, with one leg continuing over the storms, and the other offset about 15 nm parallel on the NW side of the line. Some of the ER-2 passes were very close to SGP, and almost all were covered well by the ground-based radars, including sector scans and RHIs from NPOL.

Starting about 10Z, the system slowly evolved toward weaker convection and larger

stratiform areal coverage. After 1030Z, the system had moved mostly north of SGP

and had become more scattered and disorganized, so a different line was set up. This line extended from just NNE of SGP to about 30 nm N of PNC (Pioneer vortac). After some difficulty the ER-2 and Citation did several well coordinated passes above and through (respectively) mostly stratiform echo along this line. The Citation made its first run at flight level 270 later stepping down to as low as flight level 240 as the echo tops slowly descended. When the entire system moved north of the optimum region, the mission was

shortened, the ER-2 and Citation both released to RTB, the Citation landing about 1230 Z and the ER2 about 1230Z.

The main problem in coordinating these flights was the failure of any track for ER-2 to

appear on RTMM, apparently a problem with their REVEAL box. Also, early in the flight the same problem as on April 22 when the shutdown of HIWRAP occurred. However this problem seem to be corrected after several minutes, suggesting a minimal amount of data were lost.

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